ACE15801B

P-Channel Enhancement Mode Power MOSFET

Features

- V_{DS} (V) = -15V
- I_D = -20A
- $R_{DS(ON)}$ = 11.2mΩ @V_{GS}= -4.5V
- $R_{DS(ON)}$ = 14.1mΩ @V_{GS}= -2.5V
- $R_{DS(ON)}$ = 23.2mΩ @V_{GS}= -1.8V

General Description

- load switch
- battery protection applications
- Industrial applications

Absolute Maximum Ratings

Parameter		Symbol	Max	Unit
Drain-Source Voltage		V_{DSS}	-15	V
Gate-Source Voltage		V_{GSS}	±12	V
Drain Current (Continuous) *AC	T_A=25°C	I_D	-20	A
	T_A=70°C		-15.5	
Drain Current (Pulse)*B		I_{DM}	-80	
Power Dissipation	T_A=25°C	P_D	5	W
Operating and Storage Temperature Range		T_J,T_{STG}	-55 to 150	°C

A. The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C. The value in any given application depends on the user's specific board design.

B. Repetitive rating, pulse width limited by junction temperature .

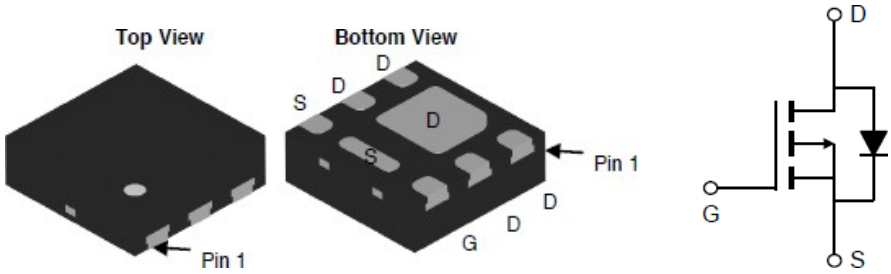
C. The current rating is based on the t≤ 10s junction to ambient thermal resistance rating.

Thermal Resistance Ratings

Parameter		Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient	Steady State	RthJA	45	55	°C/W

Packaging Type

DFN2*2-6L



Ordering information

ACE15801B XX + H

- Halogen - free
- Pb - free
- MN: DFN2*2-6L

Electrical Characteristics T_A=25 °C unless otherwise noted

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=-250uA	-15			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-12V, V_{GS}=0V			-1	uA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_{DS}=-250uA	-0.3	-0.63	-1	V
Gate Leakage Current	I_{GSS}	V_{GS}=±12V, V_{DS}=0V			±100	nA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=-4.5V, I_D=-10A		11.2	14.6	mΩ
		V_{GS}=-2.5V, I_D=-8A		14.1	18.5	
		V_{GS}=-1.8V, I_D=-5A		23.2	31	
Forward Transconductance	g_{FS}	V_{DS}=-5V, I_D=-12A		60		S
Diode Forward Voltage	V_{SD}	I_{SD}=1A, V_{GS}=0V			-1	V
Diode Forward Current	I_S	TC =25°C			-7	A
Switching						
Total Gate Charge	Q_g	V_{DS}=-6V, I_D=-12A V_{GS}=-4.5V		20		nC
Gate-Source Charge	Q_{gs}			4		
Gate-Drain Charge	Q_{gd}			5.5		
Turn-On Delay Time	$T_{d(on)}$	V_{GS}=-4.5V, V_{DS}=-6V R_L=0.5Ω, R_{GEN}=3Ω		15		ns
Turn-On Rise Time	t_f			45		
Turn-Off Delay Time	$t_{d(off)}$			135		
Turn-Off Fall Time	t_f			185		
Dynamic						
Input Capacitance	C_{iss}	V_{DS}=-6V, V_{GS}=0V f=1.0MHz		2180		pF
Output Capacitance	C_{oss}			675		
Reverse Transfer Capacitance	C_{rss}			425		

Typical Performance Characteristics

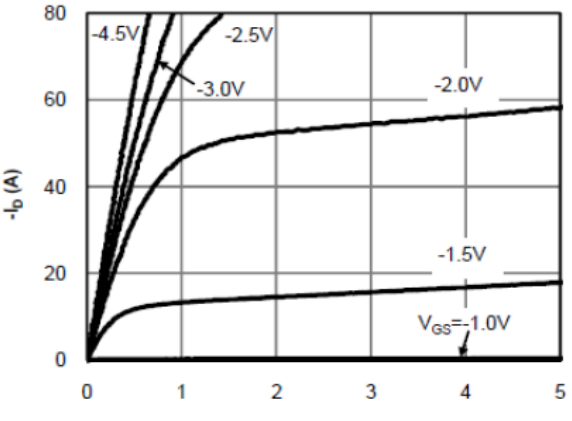


Figure 1: On-Region Characteristics

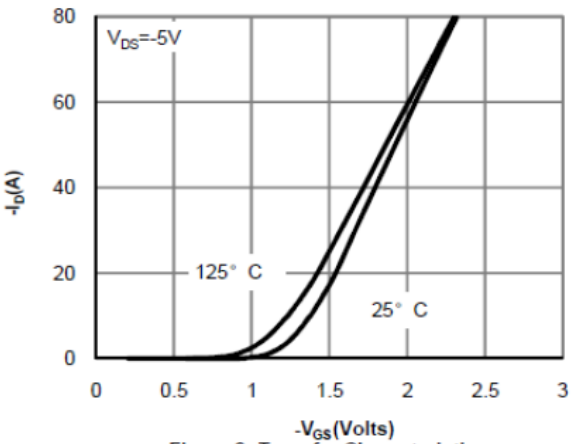


Figure 2: Transfer Characteristics

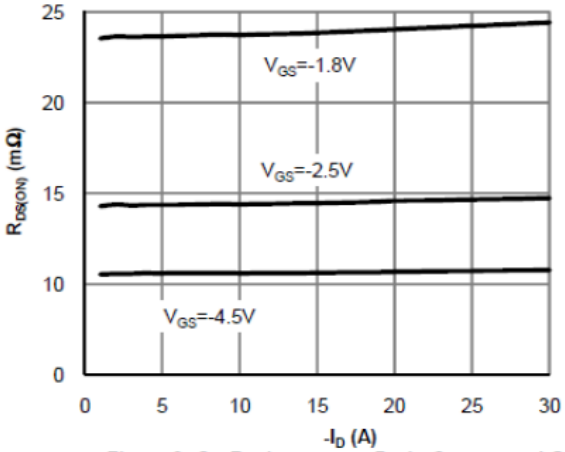


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

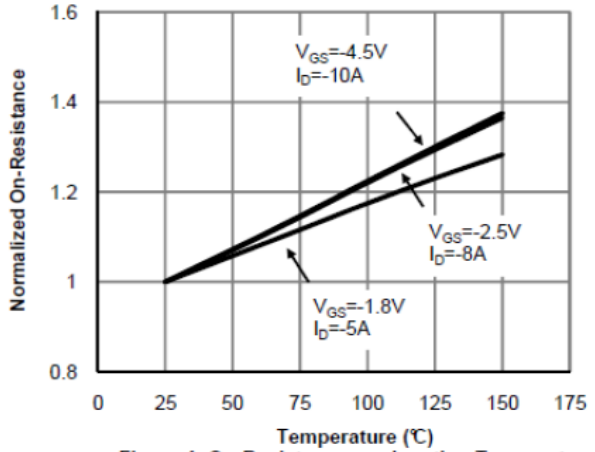


Figure 4: On-Resistance vs. Junction Temperature

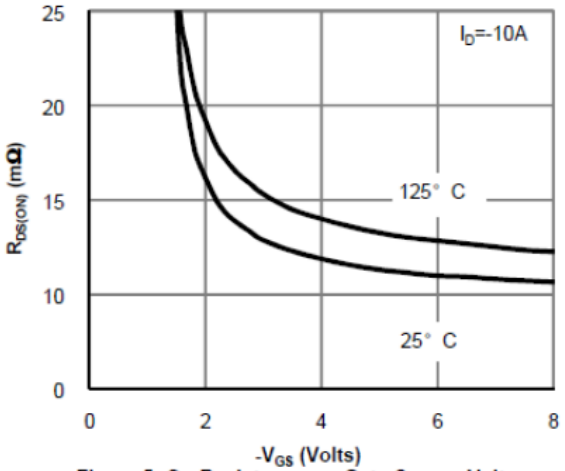


Figure 5: On-Resistance vs. Gate-Source Voltage

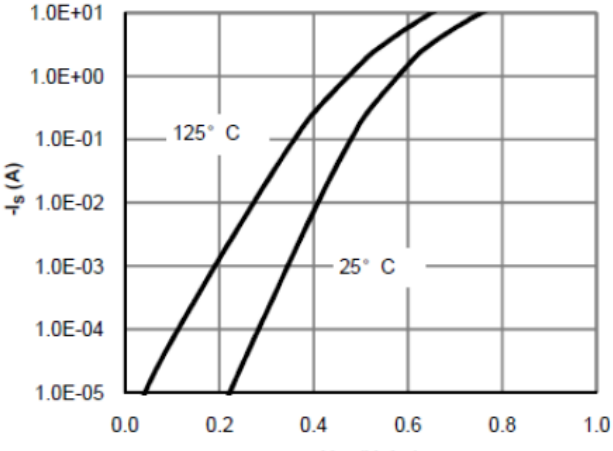


Figure 6: Body-Diode Characteristics

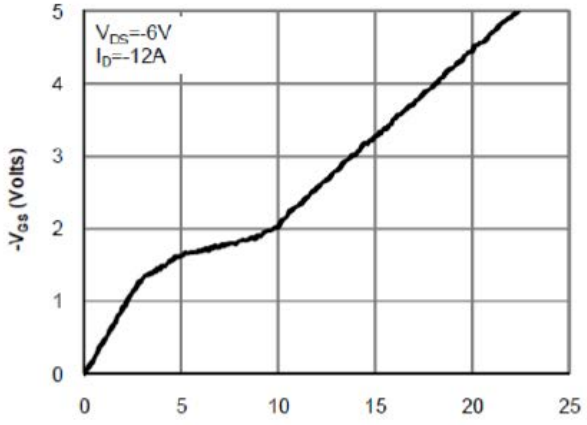


Figure 7: Gate-Charge Characteristics

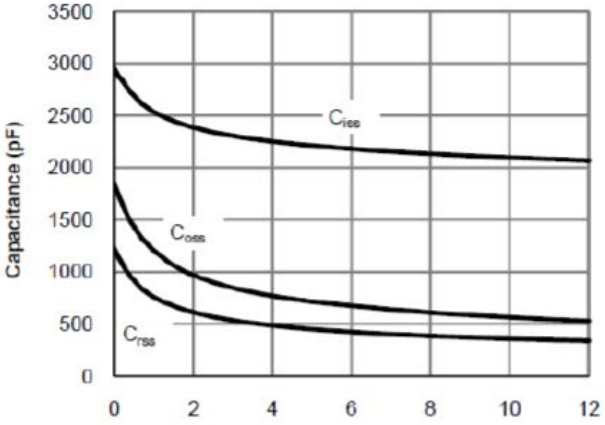


Figure 8: Capacitance Characteristics

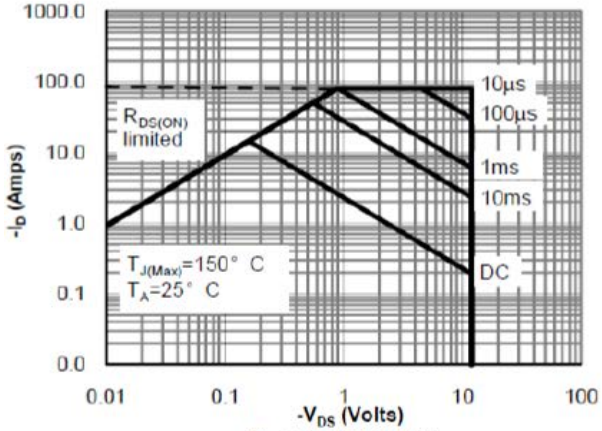


Figure 9: Maximum Forward Biased Safe Operating Area

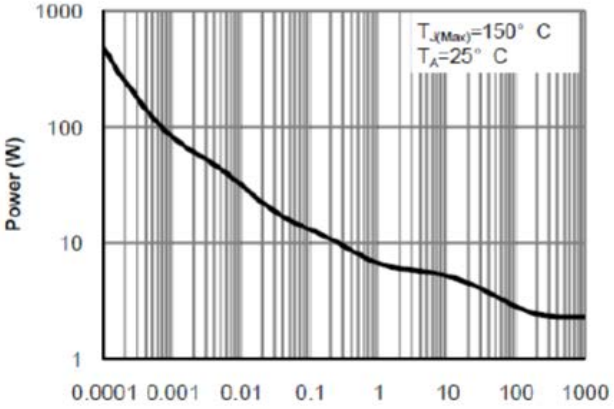


Figure 10: Single Pulse Power Rating Junction-to-Ambient

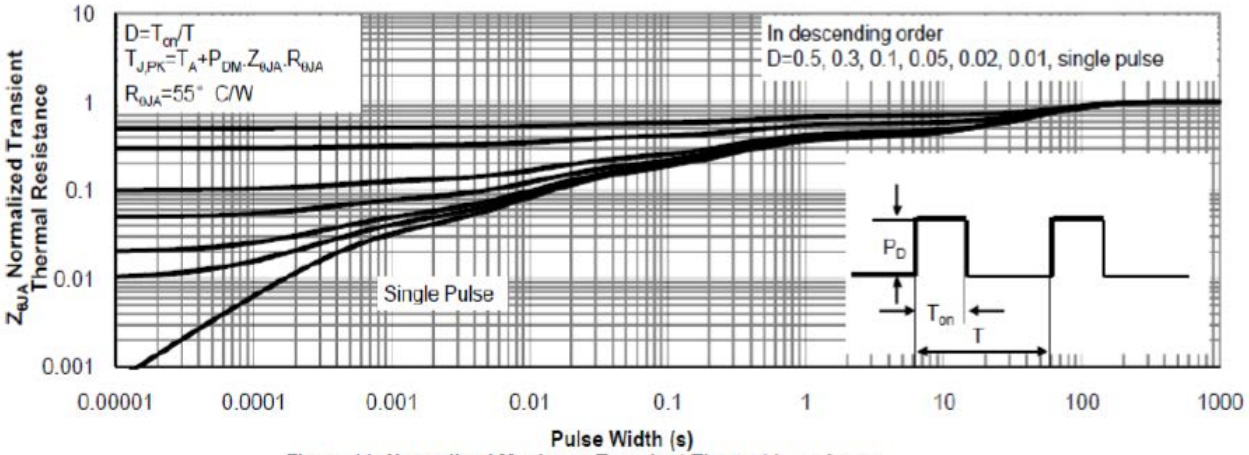
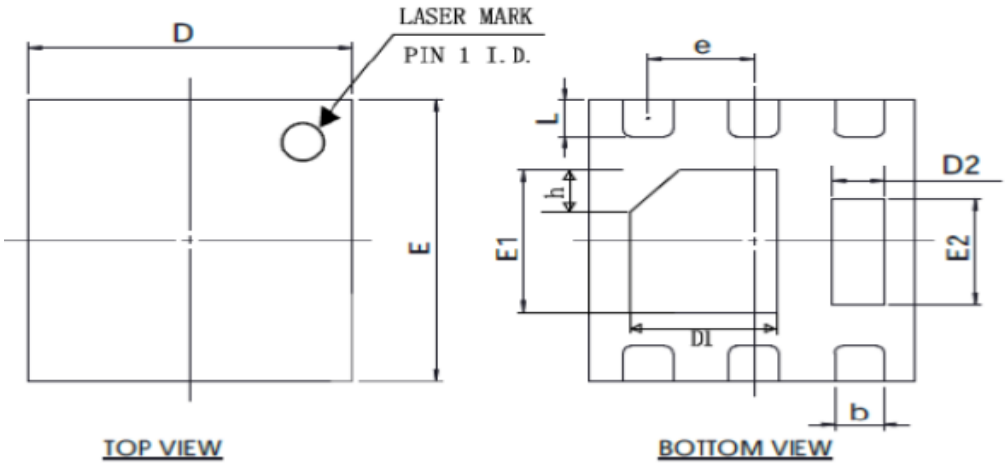
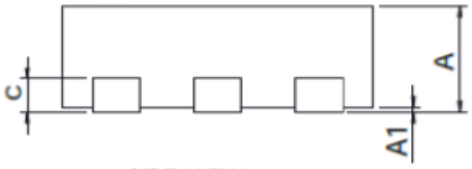


Figure 11: Normalized Maximum Transient Thermal Impedance

Packing Information

DFN2*2-6L





COMMON DIMENSIONS
(UNITS OF MEASURE=mm)

SYMBOL	MIN	NOM	MAX
A	0.70	0.75	0.80
A1	NA	0.02	0.05
b	0.20	0.27	0.34
c	0.18	0.20	0.25
D	1.95	2.00	2.07
E	1.95	2.00	2.07
D1	0.80	0.90	1.00
E1	0.90	1.00	1.10
D2	0.20	0.30	0.40
E2	0.65	0.75	0.85
L	0.20	0.25	0.35
h	0.20	0.25	0.30
e		0.65BSC	

Notes

ACE does not assume any responsibility for use as critical components in life support devices or systems without the express written approval of the president and general counsel of ACE Electronics Co., LTD. As sued herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and shoes failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury to the user.
2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.